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"Salvation of India lies in Cottages".

—*MAHATMA GANDHI*

Futility Of Writing

THERE is a stage in the affairs of men and nations when all writing and speech are rendered futile. A stage very much akin to it seems to have reached in the affairs of this country when the tallest of us feels dejected and does not know what to write. Obviously such a discouraging climate is the result of confused or perverted thinking among the dominant section of the people.

Sometime back, in the course of a Congress Parliamentary Party in New Delhi, Shri Nehru, alluded to this tragic situation in the country and chastised Congressmen for complete lack of cohesion, indiscipline and unity of purpose in the ranks of the ruling party and is reported to have stated:—

"He has not written his monthly letter to the Chief Minister for the last four months. He did not know what to write as there was so much confusion in our thinking and action."

Obviously, such a state of affairs, as alluded to by the Prime Minister, is a prelude to chaotic or anarchic conditions wherein all dynamic thinking and action are rendered futile.

Discouraging Conditions

If unresponsive and discouraging conditions in the affairs of national administration forbid the Prime Minister to write to the Chief Ministers, which normally he should have done, how much more dejecting and forbidding they are to professional journalists, writers and particularly to that rare variety in this class engaged in 'Missionary journalism'. Theirs undoubtedly is an unenviable lot in an atmosphere surcharged with confusion, hypocrisy, sycophancy, favouritism and unjust and untruthful behaviour in the ruling circle. The cause of Truth and Justice, which 'Missionary Journalism' seeks to serve has Alas! suffered irretrievably since the advent of Independence in this Country.

Our Own Experience

This journal has tried to serve the pioneering cause of Rural Reconstruction under hazardous conditions of heavy financial losses and unresponsive attitude of the ruling authorities during the last 22 years. Enlightened discussion accompanied with helpful criticism of Government measures directed to develop rural life and conditions have filled these pages —rather Volumes—all these years. But all this stupendous and patriotic venture does not seem to have brought about any perceptible change in the hap-hazard and wasteful working methods of Government development programmes. The confusion in thought and action referred to by the Prime Minister in the country's administrative sphere has been made worse confounded in the sphere of development programmes.

There is obviously a limit to criticism, which seems to have long passed and the government machinery as a whole does not seem to be amenable to reason or practical experience. They seem to persist in the wrong and wasteful ways

leading the Country to national disaster. Where is room for honest and missionary journalism in such a state of confusion and perverted attitude of the ruling authorities, we fail to understand!

Whose Responsibility

Neglect or wanton suppression of truth and justice have been, in the long history of Man and Nations, followed by fall of Dynasties and Empires and change of systems of Government. Borrowed democracy from the West seem to be developing symptoms of a fatal malady with consequences of inevitable change of system. The change is inevitable and imminent. But the responsibility for this disastrous change will be that of the present-day leadership who have played with the democratic system and allowed it to be exploited to further personal or sectional interests.

Land Reforms In The Third Plan

By: S. P. Malhotra

THE land system of the country should be such as to ensure efficient use of land for agricultural purposes. In the case of India it is all the more important to ensure that land is put to best possible use, since our developmental plan hinges on increased agricultural production. Moreover, it is absolutely necessary to stop the great drain on the country's resources which are at present being spent on the imports of food for our millions. In addition, there is a problem of reducing the inequalities among rural people. Efficient use of land could be achieved when the interest of a person who holds and actually cultivates a piece of land is one and the same. But in India this has not been the case. In certain tracts of the country, as many as 15-20 interests are reported in a single piece of land. Land Reforms Programme has a special significance in removing the impediments to increased agricultural production. Besides this, it is very essential to create conditions which will lead to higher levels of efficiency and productivity in agricultural sector.

In the First Five-Year Plan emphases were, therefore, laid to correct the unsatisfactory situation that existed in man's use, ownership and occupancy of land. For this it was considered essential to change the agrarian structure of India. Elimination of exploitation and provision of security as well as equality of status and opportunity among different sections of the rural population were accordingly accepted as objectives of a national policy. Achievement of these objectives would involve—

(a) abolition of intermediaries between the State and tillers.

(b) tenancy reforms designed to reduce rents and give tenants an opportunity to acquire permanent rights over the land by payment of fixed compensation, subject to landlord's right to resume from the tenants certains area of land for his personal cultivation.

(c) fixation of ceilings on holdings and

(d) reorganisation of agriculture through consolidation of holdings and prevention of further fragmentation.

This paper deals with only first three aspects.

Abolition of Intermediaries

The first step in the direction of ensuring proper use of land was to eliminate intermediary tenure (zamindars, jagirdars and Inams etc.) which before 1947 existed in half of the area. It is reported that they have now been reduced considerably and steps are being taken to liqui-

date the remaining tenures. Though considerable success has been achieved in this sphere, it does not mean that all problems have been settled. In fact number of States have not been able to assess the amount of compensation to be paid to the intermediaries. Thus during the Third Plan arrangements should be made to complete the payment of compensation within definite period.

Tenancy Reforms

Since the legislation relating to abolition of intermediary tenures did not affect the tenants-at-will and other layer of interests such as non-occupancy tenants, ryots, under-ryots and share croppers, tenancy legislation was, therefore, designed to help these types of interests. The aim of tenancy legislation was to ensure 3 Fs to the tenants i.e. fixity of tenure, fair rent and free transferability.

Legislation has been passed in most of the States to give security of tenure either in the form of comprehensive legislation or of stop-gap nature i.e. stay orders etc. It is essential to provide permanent relief in the latter cases.

So far as fair rent is concerned the First Five-Year Plan recommended that the maximum should not exceed one-fourth or one-fifth of the gross produce. However, existing rates still exceed the prescribed limit in the States of Bihar, Jammu and Kashmir, Madras, Mysore, Punjab and part of Bombay. It would be desirable to bring these rates within the prescribed limits during the Third Plan period. Moreover, rents should be regulated in those areas e.g. Madhya Pradesh and Saurashtra, where these have not been regulated so far.

Ownership rights

Action has also been taken in certain States to transfer ownership right to tenants in respect of non-resumable areas. In the Third Plan effort should be made to extend ownership right to all the tenants of non-resumable area. In other areas, such as Assam, Bihar, Madhya Pradesh, Madras, Mysore, Orissa and Madras (for Bargadars) it would be desirable to give the optional right of purchase to the tenants. In addition to these, tenants should be brought in direct relation with the State in areas other than those of U.P., Delhi and West Bengal.

Ceiling of holdings

In spite of a decision being taken to complete the task by the end of 1959, the enactment, not to speak of implementation, of legislation relating to ceiling on holdings throughout the country has not been completed so far. According to information available, out of 15 States only five States have been able to enact laws fixing ceiling on existing holdings. In other States legislation is still in the stage of formulation or of consideration.

Even in those States where enactment has been completed, it is reported that implementation has either not been done or is encountering much difficulty.

The aim of putting ceiling is to make the surplus land available for distribution to the landless. So far, not much progress has been achieved in this respect.

In view of the slow and unsatisfactory progress of land reforms during the Second Plan period, it is doubtful if we will be successful in achieving the target of higher production in agriculture. Nobody can deny the urgency of completing the tasks of land reforms in the shortest possible time. This will eliminate uncertainty.

It is quite apparent that much progress has not been achieved in the field of imposing ceiling on land holdings. In the States of Bihar, Part of Bombay, Madhya Pradesh, Madras, part of Mysore, Orissa and U. P. law is yet to be enacted. Most of these States, have, however, recently brought forward the legislation. It is suggested that the legislation on this aspect must be completed during the coming five years. So far as ceiling on future acquisition is con-

cerned enactment should be undertaken in the States of Bihar, Madhya Pradesh (except Madhya Bharat and Rajasthan Areas) Mysore, (other than Karnataka and Bombay areas) and Orissa.

It is expected that during the Third Plan also the primary emphasis will be on agriculture which will, in all probability, absorb quite a good deal of total outlay. Thus in the interest of higher production it is suggested that besides pursuing these programmes, described under different headings, the following problems relating to land reforms should also be tackled.

There is no doubt that there are number of lacunae in our land reforms measures. For instance it is reported that land reforms have been enacted very slowly and without adequate arrangements for their administration. Very often gaps are left and the laws by their own inherent weakness fail to serve their objectives fully. It is, therefore, essential to eliminate the delay in enactment and ensure proper implementation of these legislation.

In a large number of States tenancy reform laws had to be continuously amended from time to time as these were found ineffective or unsatisfactory. It is desirable to avoid the frequent changes in laws since these breed uncertainty in the mind of parties concerned.

In States where landlords have been given the right to resume lands, safeguards necessary to ensure that the tenants, as far as possible, are not rendered landless, should be provided. In areas where these types of safeguards already exist, these have been rendered ineffective by the failure of the State to look into the implementation aspect of the programme.

In this connection reports of the Research Project, sponsored by the Research Programme Committee, undertaken to investigate into the effects of workings of tenancy legislation in certain districts of Bombay State, conclude that legislation has not been effective in getting to the tenants security af tenure and freedom from eviction. They also found that in number of cases rents have rather been enhanced than reduced. Tenancy Reforms Committee of the Panel on Land Reforms also came to the conclusion that in certain States legislation has failed to give the intended relief. More emphasis during the Third Plan should, therefore, be put to complete the implementation of legislation already passed in several States of India during the first two plans.

Suggestions for implementation

Implementation of land reforms programme can however, be expedited by creating an active informed public opinion and by making the rural community realise their rights and obligations. In this connection village Panchayats can play a great role. This organisation has actually to function as the unit of planning and development in our country. It is gratifying to note that experiment has already been started in Rajasthan to associate this agency with the developmental activities. Let us hope that this experiment comes out to be successful.

In addition to these tasks efforts should also be made to carry out the following suggestions during the ensuing five years:—

(1) to simplify the provisions of the law so as to make these intelligible to the bulk of peasantry.

(2) to organise efforts so as to make the tenants understand the law and to ensure that they take advantage of it.

(3) to strengthen the weak economic and social position of the tenants so that they may insist on their rights.

(4) to establish strong administrative machinery within the easy reach of tenants.

(5) to maintain proper village records so that tenants can establish their possession.

Efforts should also be made to ensure that where records exist landlords do not exercise their influence in preventing the tenants in establishing their rights over the land.

(6) to change the attitude of the Revenue Officers which is, more often than not, against the tenants.

The Panacea For The Ills Of Peasantry

By: Santosh Kumar Agrawal

THE Indian cultivator to-day is perhaps the poorest as compared to its counterparts in other countries of the world. Causes are not only economic; social, educational and political factors also play an important role. The Rural Credit Survey Report of the Reserve Bank of India published in 1954 revealed that one-third of the cultivating families had a gross produce of the value of less than Rs. 200/ per year and about half of them a gross produce of the value of Rs. 400/ a year. The farm expenses of the farmer exceeded the value of gross produce by about 25 percent. All the farming families had to supplement their farm income with some other income, the most important source of which was wage employment. (The Survey Report, Vol. I, p. 72).

Among the various factors economic ones are by far the most important. Yields of almost all the crops that go to determine the overall agricultural production and income of peasantry in the country, are quite low and compare quite unfavourably with those obtained in many countries of the world. While other countries have shown signs of improvement in their acre-yields during the last few decades, reverse is the case in India, where yields instead of showing any upward trend, have actually gone down in some cases. The result is the overall low agricultural production and despite the fact that India is a predominant agricultural country, she is facing a serious food crisis. To feed her hungry masses, growing at the rate of about five millions a year, India has to import foodgrains, the total value of these foodgrains during the last 12 years being of the order of several hundred crores of rupees. It has not only resulted in the drain of valuable foreign exchange to other countries but is also impeding the industrial development which is still in its infancy and requires foreign capital goods and technical assistance for being set on a sound footing.

The problem before the country is, therefore, how to maximise the agricultural production both to remove the poverty of peasantry and to provide sufficient food for the country's increasing population, improve their standard of nourishment and for feeding the industries as well as to earn foreign exchange for the import of foreign goods.

Reasons for existing low and depressing yields are many and varied and can be attributed to various economic, social and political factors, most of which are quite well known to be repeated here. However, to understand the main problem it will be sufficient to recount some of the more important factors. There are the small, scattered and uneconomic nature of holdings, limited financial resources with the cultivators and lack of technical help and managerial skill. The next question is how to remove the various hinderances impeding the higher production and to make available to the cultivators the various facilities in the easiest and the best possible way at the minimum cost.

To understand the problem, some basic facts about agrarian situation may be mentioned.

The excessive pressure of population on land is admitted by all. The total agricultural population of India in 1951 was estimated at 249 millions i.e. about 50 million families' representing about 70 percent of the total population. The availability of land per person dependent on agriculture is about 1.6 acres (or about 8 acres per agricultural family) for the country as a whole. As regards distribution, 59 percent of the agricultural farms covering about 15 percent of the total cultivated area, comprise 5 acres or less; 94 percent of them covering 66 percent of the cultivated area have 25 acres or less. In many States including U. P., Bihar, Madras and Kerala, more than 80 percent of the holdings are below 5 acres. An enquiry in Bihar revealed that 33 percent of holdings were less ½ of an acre, 50 percent below one acre, 69 percent below 2 acres, 78 percent below 3 acres and 87 percent below 5 acres.

With the growth of population, the pressure on land is steadily increasing. One of the solutions lies in removing the rural congestion by developing employment opportunities in industrial and other sectors of economy as has been done in some of the countries of Europe. There are, however, remote chances of any relaxation of this pressure either through diversion to industry or by adopting other measures in the near future. In fact, estimates of employment opportunities offered by the projects included in the Second Five-Year Plan indicate that in terms of absolute members there will be further additions to the number of workers dependent on agriculture. Even if the employment opportunities in the non-agricultural sectors expand more rapidly that can be anticipated at this stage, it seems unavoidable that there will be further increases in the number of people depending on agriculture for employment and subsistence. It will take quite some time before the trend is halted and the pressure of population on land is stabilised.

In some countries of the world, e.g. Japan, industrialisation started much earlier than the concept of Welfare State had developed and, therefore, capital formation on a large scale based on exploitation of labour and colonies could be possible. As against it, India became free at a time when Welfare State Concepts were well advanced. Agriculture is still her largest sector and provides more than half of the national income. Capital formation will depend as much on savings in the agricultural sector as in others. Average income of persons engaged in agriculture is already very low and poverty is the rule. Capital formation and consequently industrialisation in India is, therefore, likely to be very slow. It is thus apparent that in India any reduction of pressure on land is hardly likely, at least in the foreseable future. We have, therefore, to think in terms of reorganising our agrarian economy in a manner that would enable us to provide increased employment opportunities within agriculture itself.

Reorganisation of Indian agriculture can be done either by having family farms supported by service co-operatives to provide all the facilities or by forming co-operative farming societies by pooling land, labour and capital resources of the cultivators.

As already stated the average size of holding in the country is quite small and there is a wide disparity in its distribution with the result that some of the holdings are under worked for want of labour, others are inefficiently cultivated for want of adequate capital. According to the Agricultural Labour Enquiry, 40 percent of the agricultural population (i.e. 30 percent of the rural population) consists of agricultural workers who depend wholly or mainly on hiring out their labour. Not only they remain unemployed for a part of the year, their wages are low and in case they cultivate land on tenancy basis, they have to part with a major portion of the produce. While a large under-employed population subsists on land, there exists, side by side, a large work potential. Only about 20 percent of the total cultivated area is irrigated and plenty of scope for the extension

of irrigation by the provision of more wells. tanks, embankments etc., exists. Tanks and wells, constructed in the past have to be repaired. Bunds have to be constructed for conservation of moisture. Large areas gone out of cultivation have to be reclaimed. In many places erosion of soil has to be checked.

Most of these improvements, being of labour intensive nature, require investment mainly in the form of human labour. Production can also be stepped up considerably by the intensive use of labour. Inspite of the fact that there has been additions of labour force, it has not been possible to avail of the surplus labour for the execution of schemes of improvement and intensification of labour. Though many reasons have been advanced for this state of affairs but difficulties in the use of this surplus labour arise out of the limitations inherent in family farming which is characterised by the consideration of money cost and benefit to the individual farmer rather than social costs and social benefits.

Of the two types of improvements, viz. (i) which can be undertaken with one's labour and (ii) for which outside labour is required a cultivator can take up the first type of work as the cost factor is not involved but it will be difficult for him to undertake the second type of works since most of them may not be remunerative. It is perhaps for this reason that in the past almost all the land improvement works were undertaken by the State or zamindars, who could either invest money or utilise labour at cheaper cost. Now owing to the abolition of zamindaris, the burden entirely falls on the State. Thus, there are difficulties in the proper utilisation of labour in the case of family farms. It has been suggested that to remove this lacuna, the peasants while cultivating their individual holdings could join others (assisted by service co-operatives) for undertaking improvements. This practice is beset with many difficulties and it may not be easy to organise people for co-operative lands which are in possession of others.

Besides, there are financial limitations. The funds for the service co-operatives can only be found from the agriculture itself as the industrial programmes already undertaken have placed heavy strain on the Indian economy and it may prove difficult to find funds for agriculture.

In the circumstances stated above, the only solution left is to reorganise the agrarian economy in a way so as to have planned use of land, manpower, capital and resources and make possible the use of managerial skill. This calls for the pooling of land, manpower and capital resources by co-operative action so that it may be possible to fully utilise the available resources and also obtain the economies of large scale area. In this form of organisation the considerations of outlay ond return apply on a large scale. It is also possible to intensify agriculture on a large area and undertake improvements of labour intensive nature without consideration of costs and surplus labour force can be utilised for other purposes such as improvement of village communications, housing, provision of other social amenities. The requirements of draught cattle can be considerably reduced and the available fodder supplies fed to the milch cattle to increase the milk supply. The capital resources can be utilised more fully and costs reduced. A portion of the funds released can be utilised for cottage industries. Co-operative Farming will thus open up new avenues of employment and consequently improve standard of living.

In the absence of any such organisation of producers, the need of each one of the 50 million families engaged in agriculture will have to be ascertained and provided for. It will require an elaborate machinery and entail heavy cost which may be prohibitive considering the present resources of the country. With the formation of co-operative faming societies, the States will have to deal ultimately with less

than 5 lakh co-operatives. They will also become organ of the States' in implementing its welfare programmes. Besides the producers' co-operatives will provide opportunities for working together for various groups of people now held apart due to many factors and thus bring about increasingly emotional integration of the people into a living antity.

Other economic advantages that are expected to accrue by following the programme of co-operative faming can be summarised as under:—

1. More rational use of animal and human labour through co-operative endeavour.
2. It would be possible to step up capital formation by pooling all resources for effecting improvements in agriculture, particularly irrigation and improved implements.
3. The farmers will be able to afford fuller use of scientific techniques in agriculture, improved strains of seeds, green and compost manuring, insecticides, etc.
4. Elimination of economic exploitation by middlemen through co-operative marketing of the farm produce.
5. There will emerge a local and community leadership through co-operative planning of village life.
6. Absorption of a good number of educated young men within the village and thus prevent their migration to the cities.
7. Small and poor farmers, who are regarded as non-creditworthy today, will be able to receive adequate credit and other facilities.
8. Joint farming will make for a richer and diversified village economy by the establishment of different village and processing industries to supplement agriculture.
9. Better agricultural planning through co-operative farming will release more time to both men and women of the village for social and cultural activities.

Having established that co-operative farming is the best way to increase the agricultural production in the country and to remove the ills of Indian peasantry a word must be said about its future feasibility and limitations in this country.

There are more than 2000 co-operative farming societies in India. They are of four types, namely, co-operative better farming, co-operative tenant farming, co-operative joint farming and co-operative collective farming but for all practical purposes only that form of co-operative society in which cultivators pool their land and other resources of production voluntarily for removing the disabilities they experience by carrying out farming individually should be regarded as co-operative farming society. The number of such societies is, however 600 or so. Comprehensive studies of these societies with the objective of finding out their suitability and adaptability to particular region or the State are still lacking though some stray attempts by some State Governments and Programme Evaluation Organisation, Planning Commission have been made.

A general study of the material available in the Reports published by them show that very few of the co-operative farming societies that have come into existence are of genuine type. Majority of them have been formed with the desire to counteract the possible effects of tenancy legislation already enacted or expected to be enacted and to obtain State assistance. In the main the State Governments took initiative for the formation of agricultural workers' societies, while in the landholders co-operatives, the initiative was taken by individual cultivators. Without going into detail the problems faced by the various societies in their day-to-day worknig, the problems to which solutions have to be found through planned experiments concern primarily the following aspects:—

1. Member and their rights.
2. Managing Committees and their functions.
3. Planning and Organisation of work and expansion of employment opportunities.
4. Education and training programmes for members of co-operative farming societies.
5. Management of livestock and the role of mechanised and improved techniques.
6. Protection of individual ownership of land and determination of the return for ownership.
7. Determination of the returns of work and the measurement of the work done.
8. Relationship between the programmes for consolidation of holdings and co-operative farming and
9. Administrative organisation for assisting co-operative societies, and inter-departmental responsibilities.

It is, therefore, imperative in order to make co-operative farming a real success in India to have properly planned experiments in different regions of the country with different possibilities to suit different conditions with a view to demonstrate its practical uses to the peasantry otherwise it will remain a mere pious hope and dream. The use of force must be avoided and the work should progress with pursuasion. Last but not the least important is that the emphasis should be more on the agriculture and management side and not on co-operation as co-operation is only a means and not an end in itself.

Agrarian Reforms - A Controversy

By: Tarlok Singh Sandhu

THE East India Company and the British rule vested the right of ownership of land into the hands of a few handful of landlords, Jagirdars and Inamdars for the sake of administrative ease, particularly in the permanently settled area. Their ownership of land cannot be regarded compatible with increased production and productivity. They were merely revenue agents for the British. These land-lords were sleeping managers with least interest of land improvement. Their inactivity rendered their technical efficiency and skill to a coma and the concept of increased production was put into the cold storage. These landlords were conceived to be purely parasites breeding on the hard labour of the tillers and the toilers. This class of owners could have been an asset rather than a liability in our developing economy, if they could have taken active interest in the land improvement.

Agrarian reforms caught the much intensified attention of our administration since the independence of our country. The land reforms aim at removing the basic inequality and disparity in the land distribution among the people directly associated with it. It also assists in eliminating the defects in the constitutional frame-work and in evolving a system which would promote rapid growth of the agricultural economy.

India is a land of tillers and toilers. They have small cultivated holdings, either obtained on rent or lease. At the time of partition, half of the rural land was owned by 4% of the rural population, while ¾th of the popula-

tion owned only 16% of the land. Of these, about ¼th had no land at all while another 53% had farms virtually less than 5 acres. Usually these are dubbed as uneconomic holdings due to lack of adequate finance on the part of cultivators.

With the growth of population demand for land increased and the land-lords constantly demanded ever increasing rents and rates from the tenants, with the result that these tenants became helpless and were deprived of the fruits of their labour. Excessively uneconomic rents coupled with the insecurity of tenancy and indebtedness depressed the already crippling initiative of the tenants. Thus the development work has to be ignored automatically. Moreover, the agricultural and landless labour who constituted 17.6 million families out of a total of 58 millions were uncertain about their employment due to seasonality of Indian agriculture. They lived on an income far below the per capita national income which itself was not very satisfactory.

The pioneers of the National Plans recognised the basic maxim of land to the tillers as one of weapons of land reforms. Principally five point programme of land reforms is under implementation, viz; (i) Abolition of Zamindari—a precondition to redistribution of land to landless as well as to those whose size of holding is uneconomic (ii) Security of tenureship—a condition necessary for improvement of lands. (iii) Fixation of ceilings on land and distribution of surplus land to the agricultural landless labour. There is the limit on future acquisitions also, thus landlords existence will disappear in our developing economy. A time will come when they will become active and productive farmers as they will forget to live on the unearned income as their ancestors did. (iv) Consolidation of fragmental strips of land and prevention of future fragmentation is regarded as the vehicle of socio-economic progress. Consolidation of holdings bypasses many inefficiencies in the operation of fragmented pieces of land, and (v) The development of co-operative farming and co-operative village movement. Co-operatives can secure various financial and technical assistance as and when required by them because of the trust reposed in their set up. All these land reforms tend to promote conditions suitable for evolving a pattern with a high level of efficiency and productivity.

Inspite of the operational activities of these reforms, India will be a place of small farms unlike the advanced economies of the West who are reputed for scale farming. The trend of modern agriculture in U. S. S. R. and U. S. is towards scale farming. The subsistence economy is no longer the theme of modern agriculture. Improvement in the art and technology is delaying the onset of diminishing returns in agriculture. Mechanization of agriculture is increasingly being advocated for increased production and productivity. Agronomic factors are being investigated and mastered for increased output. All these changes help in the exploitation of scarce means to their potential, involving economic utilization of men, materials and machines and the land on which they work co-operatively. This connotes the minimum cost per unit of the commodity raised in economies who adopt these revolutionary weapons of development and improvement. These technological changes which result in the commercialization of agriculture imply heavy capital investment to be supplied by the specialized credit agencies.

The theory explaining the emergence of scale farming is that the agriculture is loomed with unprecedented risks and uncertainties and the small farmers are completely reduced to wreckage when their farms are under the impact of natural calamities. The inadequacy of their resources fail to lift them up and justify their stay in the field of production. The large farms enslave small farms. And, the surplus agriculture labour is ciphoned off due to rapid growth of industries in such economies. The laws of inheritance too do not result in the seg-

mentation and fragmentation of holdings in the West.

A cursory glance over the size of the farms in the Orient and the West reveals that the average size of the farms in the Orient is far below the average size of the farms in the West. The average size of the farm in U. S. (1950) was 215.3 acres, in Netherland (1930) 22 Acres, in France (1948) 25.35 acres. The corresponding figures for the Orient are deplorably small, e.g., 3.3 acres in China 2.5 acres in Japan, 2.6 acres in Korea and 5 to 8 acres in India. Fragmentation is another drawback in the Orient holdings.

According to the 1950 census of holdings in the U. S. there were 5382162 farms, out of which 33% were over 107 acres, and only 25% of the total farms were below 29 acres. The farm number over 100 acres is hardly 88694 in India and in Rajasthan such number is hardly 7. One should not confuse the big landlords with operators of large farms. The overall picture of Indian farming depicts that the small farms predominate, which is chiefly the result of growth of population dependent upon farming only. The industrial growth only started in the last decade which will assist in ciphoning off the surplus labour force from agriculture. The legal changes too prohibit the growth of scale farming. The general poverty of agricultural class is another drawback to the growth of large farms.

The ceiling limit on future acquisition and growth of agricultural population will further result the farm size into small unmanageable strips. Both men and beasts will be subsisting beyond the starvation level.

Moreover, it is argued that the agricultural labour is only a team of good workers, and usually are bad managers. They can be directed to work but are unable to guide and supervise the work. They further lack initiative, skill and drive mainly due to financial stringency. Being resourceless they are unable to adopt the modern improvements in technology. Naturally the resources would be under the impact of under exploitation and there seems little scope to improve the yield of crops appreciably. The average yields of crops in our country are already far below the levels attained by advanced economies and the existing appalling poverty of our peasants further accentuates the agrarian problems. Further reformation of agriculture and agrarian policy would be impossible till the ownership of agricultural resources is declared as the State concern for the advancing civilization and welfare of the State.

The Village Level Worker

By: Prof. R. K. Bajaj

"INDIA lives in villages," is a traditional saying, and it still holds good; 83% of the total population of the country dwells in villages and 70% of the population is entirely dependent upon agriculture. Thus agriculture and villages form the backbone of our national economy. All progress or advancement that we make should be judged not from Bombay, Calcutta, Delhi or Madras, but from the 560,000 villages of which India is composed of. Unfortunately this very vital fact was totally neglected by the Britishers who ruled our motherland till the late night of 14th August, 1947.

It is only with the dawn of Independence that sincere and constructive thinking have been

given to the rural development. To bring about an all-round change in the villages and to revive the old village life, a nation wide programme known as COMMUNITY DEVELOPMENT PROJECTS was launched all over the country. Side by side, an agency known as VLW was also created to popularise, implement and stimulate interest among the villagers for this programme. This agency consists of a number of village workers who are ultimately responsible for the all-round village development.

The VLW is a link between the Govt. and the village people representing a new type of public servant in the administrative set up of the Govt. Thus, he is a multi-purpose man who acts as a link between the villagers and the various departments of the Govt. which provide villagers with expert assistance. Though he is part of the vast body of Govt. officials, his methods of work are entirely different from those of the traditional bureaucracy. He is therefore the key man in India's community development movement. He is in fact a rural social worker, who has been given special training and preached new philosophy of administering people, not as a boss but as a friend, guide and a well-wisher.

Qualities of the VLW

Progressive outlook, enthusiasm and will of service are the most important qualities of the VLW. In order to be successful in his mission the VLW. must be fully acquainted with village problems. He must inculcate the habit of regarding himself as one of the villagers, thereby sharing their joys and sorrows and respecting their customs and traditions. He should not work along narrow departmental lines but should work with the people as one of them and inspire confidence in them, so that the village-folk may treat him as their well-wisher brethren.

He must specialise in certain branches such as—Agriculture, Animal Husbandry, Public Health, Irrigation, Co-operation, etc. etc. He is there in the village to show what can be done with better seeds, better implements, fertilizers and better methods. A VLW has also to be trained in the art of putting across new ideas to the farmers in a convincing way. He has also to be accustomed to an austere and spartan life, which he has to lead in the village. He must be a man of broad-outlook.

The VLW. must conform to his approaches to the culture of the people. In other words the methods and techniques of approach should not be of an alien nature but should be such as are familiar to the culture and the tradition of the people. In order to be successful and popular among the village-folk, he must be trained to understand the emotions of these people, their behaviour and customs and to approach them as a friend to gain their confidence, to see their problems as they see themselves and to know the things they value and are willing to take pains to attain.

According to K. C. Dey, a VLW. should take his work with zeal and enthusiasm. He should dedicate himself to the task of serving the rural people. He must work with genuine spirit of service, with dynamic vigour for achieving not only quick results but lasting results.

So in nutshell, the essential qualities of a Gram Sevak or VLW. are zeal for public service, enthusiasm for raising the standard of village life, knowledge of rural conditions, stamina for physical work, willingness to undertake all types of manual work, maturity of understanding, ability to learn and to display practical skill in agriculture. Above all, he must be a man of character and high morale.

Role of VLW

The VLW. plays an emerging role in Indian village life. In our rural areas at present, people are suffering from several handicaps like poverty, illiteracy, ignorance, party-factions, conceit, jealousy and what not. To help such people there is urgent need of educated men who could soil their hands for the sake of others

and who have enough dignity of labour. The VLW. performs this function in a more convincing way. He is the common agent of all the development departments like Agriculture, Animal Husbandry, Public Health, Education, Public Works etc. at the village level. The utilisation of his services makes the scheme economical, as different departments need not employ their separate agents at the village level. At the same time, it makes the scheme simple for the villager to understand, as he can take all his problems to one man, who is his friend, guide and philosopher.

The VLW. is an important man in the village with a zeal to work hard. As he is above prejudices and politics and other factions of the village, he is certainly in a position to serve the village people in a better and most efficient way. As an extension worker, he counteracts these bad elements of the village through his own ideals and morals thus aiming at building a more prosperous and enlightened community.

He is also a guide, as village people are illiterate and ignorant, they are not in a position to judge what is wrong and what is right. The VLW. is always at the disposal of these ignorant people and advise them to their best advantage. He thus guides the less privileged people towards a 'Better life.' He insinuates in them the concept of a peaceful revolution—a revolution that leaves the country bettered with peace and plenty.

As an extension man—A Gram Sevak—he is more than a missionary and is an efficient salesman, who supplies ideas to the best advantage of his rural clients and the media of exchange is friendship, love and affection.

The VLW. thus helps the village-folk in a number of ways. He takes to them the latest results of scientific research in various fields and convinces them about their utility. At the same time, he takes his experience to the experts so that their conventional practices may be modified to suit local conditions. He, in other words, co-ordinates the village experience with the findings and recommendations of the Research Station. He also develops rural leadership.

He does not believe in compulsion and being a good teacher he pursuades people to take up improvements only after they have seen for themselves and accepted what is good for them. Thus he plays the role of a generalist.

He is a demonstrator as well. It is an admitted fact that mere preaching does not help to change the outlook of rural people. He actually demonstrates and convinces the rural people—how they can increase production, how they can raise their standard of living, how casteism and untouchability is dangerous for the village-life.

Then the VLW. preaches the ideals of simple living and high thinking. His dictum is friendly approach and he is the first to practice what he preaches. He always guides and persuades and never dictates.

It is said that Community Development Programme is a People's movement. The villagers realise this fact only when there is free and frank discussion. What the villagers want and what items should be given priorities for village reconstruction, that must be decided by the villagers themselves. In this respect also, the VLW. discusses every detail of the programme with the people, he is the man who assists the Government in the formulation of its policies, in the assignment of priorities and in producing at their door supplies and services which will make the Plan itself fruitful. Having done all this, he keeps a continued watch as to why certain targets were not being achieved. He sits down with the people and with their help analyses the reasons for the delay in the achievements of targets.

Lastly, it is also the aim of the VLW. to inspire the people with the conviction that their's

is the most dignified calling in the building up of new India and that what our children will be tomorrow will in a large measure, depend on the manner in which we carry out our responsibilities. What is in fact needed is patience and aptitude for service. Rural service has never been a bed of roses. It tries one's patience. They should cherish the ideals of Service and Sacrifice.

Building Up Of Block Libraries

By: C. D. Sharma

LIBRARY is not a new gift to learning in modern times, but libraries were in existence ever since the civilization appeared on this earth. When the men used to engrave their ideas on the clay tablets and brass sheets etc. evidence shows that the libraries existed at that time too.

With the advance in civilization and learning of men the libraries had to pass through various phases of development. The teachers of the Vedic India were like the moving libraries, but all the learning was limited to them and ended with their life. Then the age of Bhojpatra, Tadapatra and Manuscripts etc. came. Very valuable literature was produced by fertile Indian brains. But due to the repeated attacks of foreigners from middle and East Asia, this was destroyed and even carried away by many looters like Nadirshah etc.

During the medieval period, learning was the monopoly of small community of privileged persons. The reading materials were considered precious. At the same time, due to absence of printing press, the cheap and many copies of the same book were not available. So the books were kept chained to their cases.

Under British rule educational and other facilities were not open to all. The general public and specially the rural communities were kept totally in dark. They never knew their rights nor the attempts were made to remove their ignorance, illiteracy and poverty.

With the dawn of independence, country has become free from foreign rule, and the whole responsibilities of making the nation healthy, happy and progressive have come on the shoulders of we people—every citizen of free India.

To wash out the black spot of illiteracy and poverty, it is essential to equip all with the current information of what is going on in the country and to let them know their duties for the development of the country. This work can be fairly carried on by establishing a wide spread net of libraries all over the country and appointing skilled, competent library personnels to organize it well. In most of the villages, there have been schools to educate the village people, officers dealing with various projects, plans and specialized fields to teach village people about new developments etc. But still we realise that illiteracy and poverty exist among village people on a mass scale.

The only reply, what I could guess, is that the villagers have no self-inspiration to learn new things. They are not inspired to work on and learn while working. But, they are forced to accept whatever is taught by the officers. Hence the results are, however, not encouraging.

So, the method of the force and implementing something from the above must be left out immediately and interest should be created among villagers to learn new things and work with modern implements etc. to increase their yields, knowledge and to have a better living.

But, all this can be done by the method of self education only, and the library is the best

agency for providing self education. Hence, the library is the irremovable part of the community development which feeds the intellectual hunger of each citizen and provides him the information relevant to his profession, health, happiness and prosperity.

Now, with the advancement in printing technology, the danger of scarcity of books has gone. Many more copies of the same book can be had. At the same time, as a result of new research and development in every field of knowledge, enormous books are published on every subject. So, there seems no utility in keeping books under lock and key. In other words we can say that the days of chained libraries have gone, when the library was nothing more than a store house of books; where the librarian had to act as a book keeper of the documents stored in, for a class of some privileged persons only.

The library of modern times is a social institution charged with the duties of providing self inspiration, self education and recreation to all and librarian acts as a messenger of learning.

In our country, the role of libraries in building up a healthy and progressive community is very little known, somehow it is considered a place of interest for book-worms only, who use the library either to pass any examination or conduct research work or to pass leisure. The country men at large can be made library conscious by providing better reading facilities to all. The day is not far away when the setting up of good efficient libraries will be found indispensable so that our people learn to read and take advantage of information and ideas embodied in the printed documents, so to become competent and responsible citizens of free India.

According to Dr. Johnson 'Knowledge is of two kinds, one is what we know a subject ourselves and the other, where we can find information upon it.' It is the second type of knowledge which a librarian mainly possesses. An expert librarian can help a reader to find out required material on any macro or micro thought.

In some well organised libraries documentation and reference services are also provided to assist the research workers and great thinkers to work on rapidly without wasting time as well as energy in search of relevant material here and there.

The well organised libraries can play a great role in the development of the country.

There should be a systematic pattern of libraries, having a national central library at the top, a State Central library in each State and District and Tehsil or Block Libraries at each community Centre.

In our State the set up of libraries is as follows:—

1. Five Divisional libraries situated at Jaipur, Jodhpur, Bikaner, Kota and Udaipur.
2. Five Mobile Units attached to each Divisional Library.
3. 24 Dictrict Libraries.
4. 4 Tehsil Libraries and
5. 80 Village Libraries.

About Rs. 6 lacs are spent annually for these libraries. These libraries run under the guidance and control of Deputy Director of Social Education.

The need of Block Libraries

The area of the country, State, Division and District are too vast, and the man on the supreme administrative chair can neither keep control nor know the problems of all people in the area under his control. So, the vast areas have been divided in small units like ward, village and block etc.

As you know a Block usually consists of 100 or more villages. Block Development Offi-

cer is the administrative head of the Block and the various officers specialized in their fields are the members of the observation team to study and to find out solution of the problems of village people.

All these officers had left their colleges with techniques and knowledge prevailing at that time, and while working in the fields they are not expected to know about new developments coming out as a result of new research in every branch of knowledge. So, sufficient literature to keep them well informed with the current developments and practices in various fields related to them, is essential, and this can be available in the library only.

At the same time district and divisional libraries will be far away to provide enough literature to meet the needs of village and block people.

Hence a library in each block is essential one.

Organization of Block Libraries

To create and stimulate reading habit is a very tough job. For its achievement, it is very necessary that the library must be very well organized, well housed and well arranged to have a desirable cumulative effect upon the mind of readers.

While organising block libraries, you will find it very difficult to persue people, that is true, but you must persist and demonstrate the value and purpose of library to village people.

Unless the village people know what a good library is like, what it can do, why it is important, you shall have to teach them its utility in making life happy and prosperous. Once they understand its importance in daily life, they will become regular visitors. The library service should be so well organized to enrich all the aspects of living and should reach persons of all age groups, occupations and sexes, helping them to become self sufficient to fight against the three big enemies of the village people namely the illiteracy, ignorance and poverty.

Not only the books, but all kinds of reading and audio-visual material providing self education, development and pleasure to village children, youths and adults should be widely circulated in the block area.

According to me, even a block consisting of 100 or more villages will be a larger unit, so there should be a service point in each village. The centralised service system should be started to meet the needs of the community. All these service points should be closely linked with the centralized provision, having the central library attached with the block headquarters.

The Block central library should be comprehensive to meet the needs of subject specialists (administrative officers) as well as illiterates and semi-literates. By various methods like film shows, story, Bhajans, Cinema etc, villagers should be encouraged for reading and learning useful techniques to develop themselves physically as well as mentally. Organization of group discussions on useful topics and exhibiting books and other educational recreative materials will also be useful.

But it is certain that no library can render effective service without adequate and competent personnel. The number of staff should be sufficient to perform the duties involved in assembling, organizing and interpreting materials, and to provide consistently efficient service at all hours when the library is open.

The organization of a library is purely a technical job and a man not knowing A. B. C. of library science is bound to commit many serious mistakes, which will make the library service ineffective. So, there should be trained librarian, having minimum qualifications Matric with the certificate of library science.

There should be a block library advisory committee, acting as a policy making body for efficient library service in the block area, having

B.D.O. as the chairman and other extension officers as members of the committee.

Under the supervision of VLW. service points should be established in each village. The village leader or any villager interested should be given charge of the village library.

The books in frequent demand at the service point should be permanently kept there. Rest of the books should be circulated according to the demand at each service point. A mobile van full of books should take round of each village at least once a week. The incharge of service point will tell about the needs of the village people to the mobile van librarian, who will bring the required books for all service points in the next trip and will take back the used books.

Most of the literature for villagers should be concerning their agricultural problems:—

1 The new trends and techniques for better farming like: (a) Improved varieties of crops, (b) Improved implements (c) Improved methods of cultivation and improved practices must be explained.

2. Information regarding better seeds and how to use them.

3. To fight against infectious and other diseases of human beings and animals.

4. Educational and recreative literature.

If sincere efforts are made, it is certain that in due course of time the block library will become the centre of educational and development activities in the block area.

Pressing Need For Self-Sufficient Farms in Basic Teachers' Training Institutions

By: Shiva Nanda Jha

THE greatest need of the immediate present is to feed the hungry and clothe the naked. By far the most important part of the solution consists in educating the villagers to keep what they have and to induce cultivation of fresh crops. This requires widespread and intelligent propaganda. Basic teachers' trainers can be the best intelligent and widespread propagandists. For this purpose there can be no Basic Teachers' Training School without a sizeable agricultural farm, say of 50 acres attached to it. There is no dearth of suitable places in the country having good land for starting basic teachers' training schools with farms.

Though one of the acid tests for a school of the basic pattern is self-sufficiency in the three vital necessities of life, food, clothing and dwelling, yet not much importance seems to be attached to the craft of agriculture although food is the first basic requirement of life and clothing stands next.

But according to the architect of the basic system of education this Talim meant a living co-relationship with the actual conditions of life, it ought to respond to every change in the latter, "It would not, therefore, do for you to say in the present crisis that you are occupied with your educational activity whilst the people are threatened with death due to starvation. Nayee Talim must react to the present situation by converting itself into an instrument for increasing our food supply and teaching people how to

meet the danger of food shortage. If the students under Nayee Talim can produce even a part of their requirement they will to that extent release food for others, besides teaching them self-help by their personal example."

Since in view of socialistic pattern of our future society as well as the objective of the basic system of education, the village teacher is to act as a friend, philosopher and guide to the village folk, it is incumbent upon him that he is not only alive to but is fully equipped to react to the present problems. Thus one can easily fathom the necessity of first getting equipped those in whose hands lay the magic of preparing these friend, philosopher and guides.

The situation needs attention of the authorities in selecting suitable places for starting Basic Teachers' Training institutions and equipping them in this respect. Each such institution must have a farm and the teachers and the taught must combine together with the help of simple available equipment and tools to make the school farm self-sufficient. Then and then alone the teachers trained in such training institutions can imbibe the spirit of self-sufficiency in food and can discharge the complex responsibilities of being friend, philosopher and guides.

Whether a city or a village neither can do away with the articles of food. Hence in each setting the pressing necessity of a self-sufficient farm in the training schools cannot be obviated without sacrificing the main principle of basic education.

Side by side with an all-round effort to intensive cultivation on school farm, other avenues for food production may be explored. For example, the system of 'Soil-less cultivation' may be introduced which may serve, in some measure, the needs of those who do not have any soil. Growing of vegetables in pots and boxes and on the roof of houses, all these activities in a basic teachers' training school must form part and parcel of food production-cum-demonstration programme. The key to this all-round attack on food shortage is to enable as large a number of people as possible to grow something by individual or collective efforts.

Gandhiji himself opines thus, "If I were in your place I would not use the plough to begin with. I would arm our children with the hoe and teach them to use it effectively. It is an art. Bullock power can come later. Similarly, I would not like you to be deterred by the poor quality of the soil. A thin top layer of loam or compost can enable us to grow many a useful vegetable and pot herb. A beginning can be made at once by converting night soil into manure by the shallow trenching system. The conversion does not need more than a fortnight. Every pint of water whether from bathing or ablutions or from the kitchen should be turned into the backyard vegetable beds. Not a drop of water should be allowed to be wasted. Greens can be grown in earthen pots or even discarded old tins. No opportunity should be neglected, however trifling. The cumulative result, then, if the practice is on a nation-wide scale, will be colossal."

Initially Gandhiji thought Agriculture had no educational potentialities of spinning but later on it could come in as a basic craft, "But though I do not begin with agriculture, it is bound to come in ultimately. For, the field of New Education is comprehensive. The pupils and teachers of the school of my conception will together have to make provision for all they need."

Today agricultural crops are grown for the distant market as the idea behind the industry is commerce and not self-sufficiency. Gandhiji was optimistic of removing this anomaly with the spread of basic education, "Today, the condition of India is that vegetables grown in a village are not available for the use of the villagers themselves. The villagers of Travancore cannot use the cocoanut that are grown there. They are collected at one place and sent

to the towns. This anomally will disappear when basic schools come into existence. Again, today we cultivate money crops such as opium, tobacco, cotton etc. Those trained in Nayee Talim will cultivate food crops which they themselves need."

The initial stage of basic education ought to pass now when the main craft could be only spinning and it should be supplemented by its twin, the craft of agriculture. There is no such thing as 'agriculture' in isolation. It is the synthesised form of many physical, biological and social sciences, such as physics, chemistry, botany, zoology and economics. It is also an art. Intrinsically agriculture, the art and science of growing plants comprise of agronomy, or the growing of cereals, horticulture, or the growing of fruits, elericulture, or the growing of vegetables and floriculture, or growing of flower and ornamental plants. It covers not only raising of plants, seeds and flowers but also their processings so that the ultimate commodity is turned usable by customers. As such it includes such processings as turning of paddy into rice, wheat into flour oilseeds into oil, and casually obtaining such by-products as husk, wheat bran and oil cakes etc. To enhance the keeping time of vegetables and fruits by their preservation as such or by making and preserving various products like jellies, jams, juices, pickles, syrups and vinegar etc. is also a process included under it.

A farm to be self-sufficient, therefore, includes all these possible items plus such allied enterprises as dairy, poultry and bee keeping etc. in which case it is called a 'mixed farming.' These items besides providing the necessaries of life and maintaining proper health exhibit variety of interesting hobbies and livelihood. As such it can well serve as a medium of basic education where through many subjects may be taught through the process 'learning by doing.' To achieve the end each and every teachers' training school should have a mixed farming as one of the main activities. In the training schools the type of cultivation advisable may be what may be called 'Balanced cultivation.'

In this system, requirement of various items of food stuffs according to total population covered by a farm is to be determined and then allocation of portions of farm land to each crop is made. Effort is made to grow as far as possible all items of food stuffs required subject to soil and climatic conditions etc. to make the farm as self-sufficient as possible.

Here it may be pointed out that each and every school farm may not be wholly self-sufficient on account of one limitation or the other. But a regional self-sufficiency can be attained where surplus commodities at one farm may be supplied to another farm in the region where those cannot be grown. Through exchange of surpluses all the farms in a region may dispose of their surpluses and obtain the deficit ones. Ultimately all farms in training schools in the country may combine on national scale to attain self-sufficiency and thereby working as pioneers.

It is also necessary that suitable agricultural teachers with embryonic idea about basic pattern of education requiring greater correlation may be appointed to supervise agricultural farms in basic training institutions. At present Gandhiji's ideal of 'learning by doing' is not fulfilled owing to lack of real correlation of knowledge with action particularly with respect to the subject 'Agriculture.' This gap is to be filled up within a very reasonable time if really the Nayee Talim must react to the present situation by converting itself into an instrument for increasing the food supply besides teaching self-help by personal examples.

Co-operative Marketing

By: D. Sarathy

"PRODUCE cheap and sell dear" is the maxim that can be applied to all business and to marketing as well. The importance of marketing needs no emphasis in the national economy of a country. The system of marketing of the agricultural product in India is not satisfactory. The existence of a very large number of middlemen acting between the cultivators and the ultimate consumer in the marketing of agricultural products in all the parts of our country is a very common feature. With a view to provide a good system of marketing to the farmer, in order to raise his income co-operative system of marketing was resorted to.

Co-operative marketing is the organised sale of agricultural products on a non-profit basis for the benefit and in the interest of the individual grower. It undertakes all the functions of marketing like assembling, storing, financing, insuring, standardising, selling and transporting. To sum up in the words of Royal Commission on Agriculture in India, "Group marketing must be more efficient than marketing by individuals especially in conditions such as those existing in India, where the individual producer is such a small unit. The Ideal to be aimed at is therefore, co-operative sale societies which will educate the cultivator in the production and preparation for market of his produce."

Co-operative marketing societies have not made much headway in India because of the following reasons such as the high cost of transporting charges, tight grip of middlemen over the ryots, lack of business talent, lack of loyalty among the members and because the ryots are not sufficiently co-operative minded. The last but not the least reason being the lack of sufficient business and enough working capital.

Co-operative marketing can succeed in its aims and objectives if some basic principles are maintained. The following are some of the essential features of co-operative marketing:—

1. *An impelling legitimate purpose*: There must be a strong permanent need and the same must be legitimate too.

2. *Singleness of purpose*: The purpose of the society must be well defined and must be specialized one though the modern tendency is for the multi-purpose society rather than a single purpose one.

3. *Suitable Organisation*: The society must have a strong foundation and its members should take active interest in the management of the same.

4. *Managerial Capacity*: Management is very important and the members engaged in this work must be industrious, efficient, and must possess administrative ability. They must act in the interest of the society.

5. *Loyalty*: 'Loyalty is the tie that binds,' yet loyalty to a common cause is impossible in the absence of co-operation. Honesty and loyalty are essential in the management of the society.

There seems to lie a wide scope for reaping all the advantages of co-operative marketing to the maximum capacity if there is a judicious combination of both compulsion as well as option according to the circumstances. But co-operation is voluntary in character and as such the introduction of the element of compulsion in the co-operative societies seems to be against the very fundamentals of co-operation.

If a person on joining a co-perative society, must necessarily dispose of his crops through it, but if there is no compulsion and every member is free to sell his crops through any agency he likes the very purpose for which the co-operative society is instituted will be defeated. So the members have necessarily to dispose of their crops through the society only and in this respect there must be compulsion.

Co-operative marketing has made some progress in India and States like Madras, Bombay, Uttar Pradesh, Punjab, Bengal and Mysore etc, are worth mentioning in this respect. With a view to develop co-operative marketing in India, the Co-operative Planning Committee was set up in 1946 to investigate into the matter and some of its recommendations are:—

1. In order to link credit with a marketing, the member must sell his produce through the primary society that is attached to the marketing society.

2. The primary societies should assemble the produce of its members and transport them to the marketing societies.

3. The marketing society should advance loan to its members.

4. Besides performing the duty of selling, the marketing society must undertake the functions like pooling, grading and processing the agricultural products.

5. The supply of improved seeds, fertilizers and agricultural implements must be done by these societies.

6. The Government should help in constructing godowns where the produce can be safely stored.

As a conclusive remark, it may be stated that in order to enable the farmer to secure a fair price for his produce and to raise not only his standard of living but that of the teeming millions of our country, either markets should be regulated or co-operative marketing should be organised or may be both according to circumstances.

Serving Madhya Pradesh Through Sugarcane Research

By: D. S. Umat

THE new State of Madhya Pradesh which comprises of the 17 Mahakoshal districts of residuary M. P., the whole of M. B., Vindhya Pradesh, Bhopal and Sironj is the largest State in India, covering an area of nearly 171, 191 sq., miles. It lies between 18 and 27 latitudes and 74 and 85 longitudes, surrounded by U. P., Bihar, Orissa, Bombay and Rajasthan. Sugarcane in the State is grown in about one lakh acres of land (1959-60) under a variety of soil and climatic conditions.

General conditions:—The Sugarcane in the State has to grow under different kinds of soils ranging from rich black-cotton soils to poor stony red soils, varying climate from humid to temperate to dry. The average rainfall in the State is 36-86 inches; varying from 48.64" in Raipur division to 22.62" in Indore. In other divisions it is 45.74" in Bilaspur 44.18" in Rewa, 41.06" in Jabalpore, 28.01" in Bhopal and 27.7" in Gwalior. The highest max. temperature touches 120°F in May & June and

the lowest often below freezing point in December and January. The monsoon generally starts from the second fortnight of June and continues upto the month of September. This corresponds to the "Grand—Period" of growth of sugarcane. Although the commencement of the rainy season and its duration vary from place, to place, the main precipitation is received from July to September. During this period the monsoon is active, the soil and air are wet and warm, creating favourable conditions for active growth of the sugarcane plant. With the recession of monsoon and the onset of cool winter months, growth slackens and accumultation of sucrose in stalks commences. The early period of summer i.e. March is fairly favourable for quality but during the severe part of summer from mid-April to May, the crop deteriorates.

The Sugarcane, in the State is sown from Feburary to April, with few exceptions of October sowing in factory areas. This period also corresponds to the harvesting of scgarcane in the State. The climatic conditions of this period are favourable for peak maturity and for good germination and tillering too. After April, the crop starts deteriorating. Thus very short period for maturity is left with the cane-crop which is due to extremes of climatic factors in the winter and summer months. In fact this narrowing down of the maturity season has placed many limitations on sugar Industry in general. The capital, machinery and labour, remain idle for major portion of the year thus adding to the overhead charges on Sugar production. This being more prenounced in absence of varieties with different ripening periods. The major variety co. 312 which till now was feeding out Industry, has succumbed to red-rot disease, thus a difficult varietal situation has arisen, calling for its early replacement by a suitable substitute.

The entire period of sugarcane life may, for convenience be divided into following five distinct phases for a February sown crop viz:—

1. The Germination phase, from Mid-February to April.
2. The Tillering phase, from May and June.
3. The Active growth phase, July to Mid-October.
4. The Flowering phase, Mid-October to November.
5. The Sugar accumulation phase, November to January.

Thus, we see that the main season for sowing cane in the State extends from January to April but as hot weather advances the borer attack increases particularly in the months of April and May. With the onset of monsoon in the later June, the active period for growth of cane-crop starts which is actually the grand period of growth and covers July, August and September. This period gives almost the whole of the annual precipitation. During this period the temperatures are lowered, humidity goes up and we get a precipitation of 20" to 60" in different parts of the State. With the end of this monsoon the weather turns dry and cold, the growth of sugarcane stops and the arrowing types of cane varieties start throwing arrows. The cane now begins rapidly to mature. The main working season for the sugar factories starts.

The second season for planting is in the months of October and November and in this cane can be left to grow, where the land can be occupied by this crop for more than the normal period of about 12 months, say upto about 14-16 months. The canes planted during this period, however, escape the attack of borers, have also a long season for growth. This can at present be adopted by resourceful cultivators for pleasant cultivation while for peasant cultivation it requires wide propaganda to convince them that October planting is more profitable than their March and April sowing plus the wheat crop which they do not like to part with.

Object:

The object of Sugarcane Research in Madhya Pradesh is primarily the selection of high yielding, good quality canes suitable for different tracts and evolution of appropriate Cultural, Manurial and Irrigation Schedules with a view to step up the yields and quality and reduce cost of production.

Cane Tracts and their Problems

The main sugarcane tracts of the State according to soil and agricultural practices are:

S. N.	Cane Tracts	Area (% of total)	Production (%of total)	Sugar Factories	Remarks
1	2	3	4	5	6
1.	*Eastern Tract* (Drug, Bastar, Raipur, Bilaspur, Raigarh & Sarguja districts).	11	13	—	
2.	*Central Tract* (Mandla, Balghat, Chhindwara, Betul, Hoshangabad, Jabalpur, Sagar & Sehore districts)	22	18	1	Sugar factory at Sehore.
3.	*South-Western Tract* (Nimar, Dewas, Indore, Shajapur, Ujjain, Mandsaur, Ratlam, Dhar & Rajgarh districts).	25	19	3	Sugar factories at Mahidpur, Jaora & Dalauda.
4.	*North-Western Tract* (Chhatarpur, Tikamgrah, Bhind, Morena, Gwalior, Shivpuri & Guna District).	36	36	1	Sugar factory at Dabra.
5.	*Remaining Districts* (Below 300 acres)	6	14	—	
		100	100	5	

CANE TRACTS	*MAIN PROBLEMS*
1. *Eastern Tract.*	(1) Replacement of Co. 312 and Indigenous varieties with improved, drought resistant & Gur-purpose varieties. (2) Evolution of Cultural, Manurial and Irrigational Schedules.
2. *Central Tract.*	(1) Popularising of Co. 419 and Co. 646 Gur-purpose varieties. (2) Evolution of cultural, Manurial and Irrigational Schedules. (3) Mill-purpose variety, low in pithiness for Sehore-factory area only.
3. South-Western Tract.	(1) Introducing of Gur and Mill-purpose variety befitting Black-Cotton soils along with their Cultural, Manurial and Irrigation schedules. (2) There being no irrigation facilities the variety will have to be somewhat drought resistant with good, ratooning capacity. (3) Introduction of suitable early varieties for early start of the Mills.
4. *North-Western Tract.*	(1) Where irrigation facilities do not exist, the variety will have to be drought resistant in order to overcome the dry-summer conditions particularly for Harsi tract. (2) Also Red-Rot resistant due to water-logged conditions that may develop with the advent of Chambal Canal. (3) Early maturing cane for early start of mills. (4) Variety befitting water-logged conditions. (5) Weed-problem is pretty serious. (6) Climatic conditions also favour the growth of some most destructive pests. (7) Evolution of Cultural, Manurial and Irrigational Schedules. (8) Replacement of Co. 312 and Co. 453 which have been reported to have succumbed to red-rot-disease. (9) Replacement of Cos. 321 which has succumbed to smut.

N.B.:—The N-W-Tract has got the maximum problems with minimum potentialities of developing Sugarcane with the advent of Chambal Canal.)

Cane-Tracts of Madhya Pradesh

The main Sugarcane Tracts according to soil and agricultural practices of the State are:—

(1) *Eastern-Tract*:—Comprising of Durg, Bastar, Raipur, Bilaspur, Raigarh, and Sarguja districts having Red, sandy soils lacking in Nitrogen, Phosphorus, Calcium and Organic matter. This tract constitutes about 12% of the total area under sugarcane.

(2) *Central-Tract*:—Comprising of Mandla, Balaghat, Chindwara, Betul, Hoshangabad, Jabalpore, Sagar and Sehore districts having Black cotton soils in the West and sandy in the East which lack in Nitrogen, Phosphorus and Organic matter but sufficient in Calcium and Potassium. This tract costitutes about 24% of the total area under sugarcane.

(3) *South-Western-Tract*:—Comprising of Nimar, Dewas, Indore, Shajapur, Ujjain, Mandsaur, Ratlam, Dhar and Rajgarh districts having Black cotton soils locally known as 'Chikani Mati' with sufficient Calcium nodules, Lacking in Nitrogen but sufficient in Phosphorus and Potassium. This tract constitutes about 26% of the total acreage under sugarcane.

(4) *North-Western-Tracts*:—Comprising of Chhatarpur, Tikamgarh, Bhind, Morena, Gwalior, Shivpuri and Guna districts having sandy loam, black mixed with red soils which lack in Nitrogen, Phosphorus and Organic matter but sufficient in Calcium. This tract constitutes about 38% of the total cane area of the State and possesses the maximum potentiality for increasing the yield under this crop with the advent of Chambal Canal.

The crop of sugarcane in the State is cultivated under different kinds of soils varying from locality to locality and include, black cotton soils, light sandy soils, sandy loams and clay loams, based no doubt on the accumulated experience of several generations of cane growers, certain types of cultivation have become associated with particular soil and climatic conditions. To what extent these can be modified with advantage is yet a matter for investigation.

While many variations in preparatory tillage planting and after-cultivation can be noticed, the method of cultivation mentioned herein may be followed for securing higher yields.

Dabra Method

1. Select land commanding irrigation, with good sub-soil drainage. If soil lacks drainage open out drains 40-50 feet apart.

2. As our soils are deficient in organic matter, grow a preliminary crop of green manure of sann-hemp (cow pea of Moong T) by broadcasting about a maund of seed per acre. Just before flowering i.e., about two months after sowing, plough in the crop properly so that it may rot easily.

3. After fortnight, plough the field thoroughly and deeply with a mould-board plough.

4. About a fortnight after, open furrows, with a ridge plough along the contour or across the slope, 2½ feet apart, with water channels at 35-40 feet apart running down the slope. Till this preparation, the month of October would end.

5. With the start of November, select young and vigorous cane of 8-10 months old for seed, cut them into pieces with three eyes each termed as sett. Try to avoid taking seed material from old canes of over 12 months and from arrowed canes as they generally do not give good setts, resulting in poor germination.

6. While cutting setts look out for borer-damaged and red-rot affected ones and if found should be rejected.

7. Soak the selected setts in water for 24-48 hours. This may be done by putting them in drains and filling water by closing ends of drains. Drains must be opened out afterwards.

8. Adopt following manurial-schedule for sandy loam and loamy soils.

For resourceful cultivator.
180 lbs. of Nitrogen plus
60 lbs. of P205 per acre.
or
About 10 mds. of Amm.-Sulphate plus
4.5 mds. of Super-Phosphate, per acre.

For Ordinary cultivator.
60 lbs. of Nitrogen plus
60 lbs. of P 205 per acre.
or
About 3 mds. of Amm.-Sulphate plus
4.5 mds. of Super-Phosphate per acre.

In both the cases, half of the total Nitrogen should be given at planting and the remaining half at the time of final earthing in the form of sulphate of Ammonia. While the whole of P205 in the forms of super-phosphate should be given at the planting time. The proportion of inorganic to organic should as far as be 1:2 to meet the Nitrogen requirement of the crop.

9. Apply the fertilizers in furrows and mix it well.

10 Spread the setts, end to end to facilitate regular planting.

11. Attempts should be made to keep the eyes side-ways. Do not press the sett down as eyes may get damaged but gently push it away into the side so that the soft soil of the ridge may drop over the sett covering it.

12. Plant the setts not in the centre bottom of the furrow, as the ground will be found to be hard and may damage the eyes, but at the bottom towards the ridge away from the centre where the soil is soft.

13. Irrigate gently the furrows without damaging the young seedling as often as necessary to keep the soil moist. Later on germination will be seen in about a month i.e., by the end of November.

14. After about six weeks of sowing, weeding in furrows should be done in order to reduce competition between weeds and plants, particularly when the plant is in its early stage of germination.

15. Irrigate regularly once a fortnight during April and May and once a month in other months, except during rains so as to keep the soil moist. Interculture, after every irrigation appears to be an inevitable factor adding to the final yield in northern tract (The water requirement of sugarcane crop is about 90% inches and the optimum moisture content is as high as 80% of the water holding capacity of the soil. These two factors should also be borne in mind while evolving scientific irrigational schedules. Particular attention should be given while irrigating this crop during April and May.)

16. Remove all shoots (tillerings) that appear after five months of planting, as these will not ripen along with others but all the same feed upon the plant food in the soil. These being unripe at harvest time will, if left to grow lower the purity of juice.

17. Prop the canes near water courses and drains, if tending to lodge, tie up with the neighbouring clumps. No wrapping is necessary for the improved canes as they are hardy.

18. Usually 12 months after planting, came will be ready for harvest. However, arrowing is not a sign of ripeness.

19. Controlled harvesting should follow in the following order:

Ratoon & Early Cane — November & December
Mid-season Cane — January & February
Late Canes — March & April

20. Protect the crop from borer-havoc during hot months. Light earthing and watering

will do. Where facilities exist, spraying with Endrin will go a long way in reducing the incidence.

21. Follow a suitable rotation befiting the locality and requirements. Cane after Cane and the usual practice of planting late in April, after the harvest of the wheat crop should altogether be discouraged.

22. *Varietal Schedule*:—Grow only Cos. 245, Co. 419, Co. 421, Co. 527, Co. 617, Co. 646 & Co. 954 for higher yields and better juice-Quality. Avoid growing Co. 312, Co. 453 and Cos. 321, which have succumbed to red-rot and smut diseases respectively. Encourage growing Co. 646 and Co. 678 in Jabalpore and Bhopal divisions respectively.

Cos. 245, Co. 527 & Co. 646 are early and 'Gur' purpose varieties, the rest being mid-season and Mill-purpose ones, although their gur-quality is also satisfactory. Co. 419 is a soft, delicate, mid-season variety which can be used for chewing purpose also. In chambal-command-area Cos. 245, Co. 419 and Co. 617 should be encouraged. For saline and water-logged conditions Co. 285, Co. 356, K32 and B. O. 3 may be tried for B. O. 3 and Co. 617 are good varieties for water-logged and red-rot affected areas respectively.

Agricultural Indebtedness In Some Areas Of Rajasthan

By: Dr. Dool Singh

IN a previous issue of this Journal we had examined the income and expenditure pattern of the rural people of Sikar and Jhunjhunu Districts. The most striking conclusion of that study was that, on an average, the rural families of seven villages studied intensively had a net deficit of Rs. 131 per family for 1953-54. In this article we propose to examine the cumulative effects of these deficit family budgets of the cultivators of these two districts.

It is generally believed that as a result of a rise in prices of produce in recent years the farmers have become rich and the indebtedness has, therefore, been wiped off. Our detailed investigations in the seven villages are in a striking contrast to this belief. The following table makes outstanding revelations on the subject:—

Indebtedness in Seven Villages, 1939-54

Village	Debts due in 1939	Amounts since paid	Debts outstanding at the time of Enquiry
Basghasiramka	2,350	2,350	7,725
Sarupsar	3,700	2,950	8,750
Sigri	4,210	4,200	11,165
Mohanpur	11,450	10,225	41,478
Khanpur	24,215	20,100	87,300
Tonk Chhilri	9,135	7,050	23,430
Dhanigumansinghki	10,240	8,240	23,810
Total	65,300	55,115	2,03,658

The most striking feature of the above data is that though the agriculturists had repaid most of their debts due in 1939, namely about 85 percent, they were over head and ears in debt at the time of our door-to-door inquiry in 1953-54. On a careful study of the circumstances we find that with a rise in prices of agricultural produce during the war years, the clutivators could liquidate most of their old debts but at the same time they also inculcated the habit of spend-thrift in matters of unproductive expenditure such as celebration of marriages, *nuktas* and and the like. The repayment of old debts enhanced the credit-worthiness of the farmers immensely. Consequently, they resorted to borrowing of huge sums from the money-leaders.

Moreover, in recent years the farmers had to pay for purchasing their necessaries at prices which were comparativley much higher than the prices that they obtained for the sale of their produce. It is a common experience of the farmers that they had to purchase most of the controlled articles during the post-war years at black-market rates. The grain procurement policy, the repeated famines, the tremendous increase in the agricultural rents and loss of cattle due to epidemics further aggravated the situation. A few farmers seem to have contracted loans for construction of wells as well in recent years.

The following table based on the indebtedness data in the seven villages will prove useful in this connection:—

Incidence of Debts in Shekhawati.[1] 1953-54

Region	Families in debt		Debt per Indebted family Rs.	Debt per family Rs.	Debt per standard Bigha of land holding Rs.
	No.	% to total			
North-West Desert	35	77.8	471	366	11
Central Plains	155	73.1	903	660	27
Sub-montane Region	84	83.2	562	468	24
	274	76.5	743	569	24

Of 358 farm families, as many as 274 or about 77 per cent were in debt; the average burden per indebted family comes to Rs. 743 while the average in respect of all families works out to Rs. 569. If we apply this average to all the farm families, the total indebtedness of the agriculturists of this region would amount to a colossal figure of about seven crores, which does not appear to be an overestimate in view of the severe setback alluded to in the preceding paragraph. Further, the incidence of indebted families is the highest in the submountane region while the debt per indebted family is largest in the Central Plains.

The indebtedness per bigha of land holding comes to nearly Rs. 24. Here, again, the indebtedness per bigha is comparatively higher in the Central Plains and Submountane region.

1. This is the historical name of the area covered by Jhunjhunu and Sikar Districts.

Comparative Incidence

In this context it would be quite instructive to study the incidence of debts arrived at by the All-India Rural Credit Survey for 1951-52. The following table gives some very useful information on the subject under discussion:

Incidence of Debts in Some Districts of Rajasthan[2]

Districts	% of indebted family to total families	Indebtedness per indebted family in Rs.
Sikar & Jhunjhunu	77.0	743
Jaipur	73.4	821
Barmer	57.2	865
Sawai Madhopur	75.5	785
Chittorgarh	71.9	562
Sirohi	39.5	883
Churu	34.1	654

Some facts emerge from an analysis of the above table. In the first place, though the proportion of indebted families found by us is the highest, the debt per family was higher in Jaipur, Barmer, Sirohi and Sawai Madhopur Districts. Again, though the incidence of debts in the neighbouring district of Jaipur is almost similar to that of the region under study, the proportion of indebted families is in a striking contract in the other neighbouring district of Churu; but the mean indebtedness per family in the area studied by us, i.e., Rs. 743, compares favourably with the mean of Rs. 762 that works out for the six districts covered by the Rural Credit Survey.

Secured and Unsecured Debts

Our data regarding the security of loans in the seven villages reveal that out of the total indebtedness of Rs. 2,03,558, an amount of only Rs. 16,320 or 8.1 per cent of the total was secured, mostly against ornaments and livestock. The only loan secured against immovable house property was the taccavi amounting to Rs. 1,500. From our observations during the course of the investigations it may be stated that, while in the case of poorer farmers the money lenders insisted on tangible security of about twice the value of loan, most of the farmers with better means could obtain the loans without any security. In this connection it is important to note that the rate of interest in case of clean advances against personal security is comparatively much higher than the rate for secured loans.

Use of Borrowings

The following statement shows the purposes for which debts were incurred by 274 farm families in the seven villages studied intensively:

2. Figures for Sikar and Jhunjhunu Districts are based on the intensive survey of 7 villages done by the author. The data for the remaining six districts have been compiled from All-India Rural Credit Survey Report Vol. III, p. 311.

Percentages of Debts incurred for Various Purposes

Purposes of Borrowing	North West Desert	Central Plains	Sub-montane Region	Total
1 Maintenance of Family	35.1	43.9	32.2	40.5
2 Cost of Cultivation, Payment of rents and litigation expenditure on arable land	23.0	16.2	33.6	20.8
3 Convential Expenditure	13.8	15.8	14.1	15.2
4 For Livestock and Improvements	28.1	24.1	20.1	23.5
All purposes	100.0	100.0	100.0	100.0

It is evident from the above statistics that most of the debts were contracted for consumption and unproductive purposes. The most undesirable feature is that the farmers borrow for procuring food, clothing and other items of consumption. About 15 per cent of the borrowed money is practically wasted in meeting conventional needs. From our observations in the villages, we find that the convention of incurring a huge wasteful expenditure on the death of a person in the farmer's family is still widely prevalent in rural areas in spite of the prohibitive legislation in force. As a matter of fact it has almost become proverbial with the villagers that whereas formerly they had to perform only one Nukta, now they have to do two nuktas, the additional one being the expenditure for bribing the corrupt police and panchayat officials. Besides, in recent years the villagers have also resorted to over-spending on feasts and ornaments at the time of marriages.

It is also apparent from the foregoing table that recently the farmers have been subjected to a very heavy strain due to increase of rents and considerable expenditure involved in litigation mainly for arable land. The over-exploitation of the rack-rented peasantry in the past by the erstwhile Jagirdars, the method and time of recovery of rent by the State now further aggravate the situation. The rents have to be paid just after harvesting and thrashing of produce and as a result the farmers are obliged to sell a considerable portion of their produce at highly unremunerative prices.

It will suffice to point out here that looking to the degree of exploitation and other peculiar conditions obtaining here, it is a matter of great surprise that the farmer could any how manage to survive. We should not (and reasonably cannot), therefore, be astonished to find the farmer over head and ears in debt under such circumstances; of course, the tragedy of indebtedness is very much accentuated by the fact that the producers of food grains borrow mainly for procuring food. Borrowed finance in industry (including agriculture) is neither a cause for alarm, nor is it a sign of distress but when contracted for purposes of consumption in the sphere of agriculture, it certainly becomes a distress signal and more so when the agriculturist fails to pay off the same.

Debts and Conventional Expenditure

In this connection it would be quite useful to study the correlation between the debts and the expenditure incurred by the cultivators on death, marriage and other ceremonies. The following table[3] makes an interesting reading:—

3. The figures for Churu, Jaipur, Barmer, Sawai Madhopur and Chittorgarh have been taken from Vol. III of the Report Rural Credit Survey (vide pp. 311 and 358). The expenditure for Sirohi seems to be unduly understated and hence it has been omitted.

Debt per Indebted Family and Conventional Expenditure

Districts	Debt per indebted family in Rupees	Expenditure on death marriage and other ceremonies, etc. in Rs.
Sikar & Jhunujhunu	743	92.4
Churu	654	48.4
Jaipur	821	234.0
Barmer	865	191.4
Sawai Madhopur	785	85.7
Chittorgarh	562	63.0

It is quite evident from the above data that with an increase in conventional expenditure there is a corresponding increase in the debt per family. Thus, the unusually large expenditure on death, marriage and other ceremonies in case of Jaipur and Barmer districts is indicative of the cause of very heavy indebtedness in these areas. The small amounts of conventional expenditure with corresponding lower incidence of debts per family in Churu and Chittorgarh districts lend further support to our belief that the wasteful expenditure of this type is one of the important causes of the poverty of the rural masses in this part of the country.

Remedial Measures

Our study of the problem of agricultural finance in general, and rural indebtedness in particular, has shown that unless drastic measures are taken to combat the evils, the cultivators are not likely to benefit much. The following scheme is suggested for the solution of the complicated problem of agricultural finance:--

(a) *Passing of Debt Relief Legislation*: Legislation should be passed immediately to scale down the existing debts. The activities of the money lenders should also be controlled and regulated by passing suitable legislation on the lines of the Bombay Money Lenders Act. The Principle of Damdupat should also be incorporated in the Act.

(b) *Promotion of Co-operation*: Co-operative Societies are practically non-existent in this region. Efforts should be made to make the farmers co-operative minded and to induce them to take advantage of the financial facilities provided by the State and other financial institutions through Co-operative channels.

(c) *Taccavi Loans*: The taccavi should be granted by the State on a much larger scale and an attempt should be made to induce the cultivators to take advantage of taccavi facilities by suitable amendments in the existing rules. The procedure should also be simplified and drastic, action should be taken against the staff causing delay in the payment of advances.

(d) *Development of Agriculture and Cottage Industries*: The curative and preventive remedies suggested above will be of no avail unless a serious attempt is made to convert farmer's deficit economy into a surplus one by the development of agriculture and cottage and subsidiary industries on scientific lines.

A Socio-Economic Survey Of Khedla Village In Rajasthan

By: Jagdish Mehra

General Background:

A SAMPLE survery of Khedla village was undertaken by the author recently covering 41 families out of a total number of 102. The village occupies an area of 2,993 bighas of land with a population of 960.[1] The entire village was divided according to castes for the purpose of conducting this survey. This caste-wise division of population was considered proper because the people of different castes were living separately. It was also done with a view to compare the living standards of different castes. The main castes residing in the village are Chamar, Kumhar, Mali, Rajpur, Khati, Jat, Brahmin and Muslim.

Khedla is situated near Pilani in the North-Western part of the Jhunjhunu district in the Jaipur division of Rajasthan. The climate of the village is invigorating and dry. The rainfall is below 15 inches and is mainly confined to the months of July, August and September. The agriculturists depend wholly upon rain for cultivation of land with the result that the village is subject to famine. The stresses and strains of famine are not so pronounced here since the majority of villagers are employed under the Birla Education Trust[2] and Central Electronics & Engineering Research Institute[3]. The soil is sandy and, therefore, not suitable for growing wet crops e.g. paddy, sugarcane, etc. Bajra is the most important crops grown here. It is also the most important food crop in Rajasthan State occupying an area of about 34% of the total cropped area.[4] Other important crops of this village are Gram, Moth and Jowar. A population study of Khedla based upon the statistics collected on marital status, civil condition and sex-ratio etc. under the present survey both according to age-groups and castes yields several interesting conclusions.

2. *Population Trends:*

Statement showing sex-ratio and Marital status in Khedla

No·	Age Group	Male	Female	Sex-ratio	Married	Unmarried	Widow	Widower.
1.	Below 1	9	9	1,000	—	18	—	—
2.	1-12	52	40	769	25	67	—	—
3.	12-20	26	38	1,462	47	12	5	—
4.	20-30	26	21	808	43	2	1	1
5.	30-40	17	11	647	27	—	1	—
6.	40-50	8	14	1,750	20	—	1	1
7.	50-60	9	1	111	8	—	—	2
8.	Above 60	3	7	2,333	3	—	5	2

1. According to Census of 1951 (Figures collected from the Tehsil Office, Chirawa).

2. All the educational and other institutions at Pilani are under the direct management and supervision of B.E.T.

3. The C.E.E.R.I. was established at Pilani under the Council of Scientific & Industrial Research under Second Plan—Second Five—Year Plan, p. 525.

4. Agricultural Statistics 1950-51 Rajasthan State, p. 27.

It is evident from the above table that the highest sex-ratio is in the age-group 40-50 while the lowest in the age-group 50-60. The sex-ratio of the people below 12 years which constitutes 38% of the total population under survey is 813 revealing that population is not likely to register any appreciable rise in the immediate future. It is, however, bound to multiply fast enough as the younger generations mature in due course, say in another decade or two becoming the potential parents of to-morrow. The practice of child marriage is frequent as 25% of the total population in the age-group 1-12 were found to be married. The widows are more than twice the number of widowers which is quite in conformity with the existing practice of not marrying widows in the country.

3. *Income Pattern*:

During the enquiry, data on the income of each individual earner in the family were collected from the following different sources:--

(a) Cultivation of land.

(b) Agricultural labour.

(c) Non-agricultural labour.

(d) Occupations other than farmnig.

(e) Others.

The item 'Occupations other than farming' include income derived from the sale of milk, ghee, butter and cattles, etc. while the last item 'Others' includes income mainly from the sale of fodder. Fodder is taken here to mean as bushes and remains of crops left on the field when reaping operations are over. The following statement shows the annual income in Khedla from various sources:

(Refer statement on page no. 234)

It is clear from the above table that, the income accruing from the cultivation of land for the whole village works out at 32.1% of the total income. Jats obtain 67% of their total income from this source; it is also significant in the case of Khatis, Rajputs and Brahmins. It is interesting to note that Chamars get the lowest income from this source—roughly 9% of their total income. An important fact that emerges from this income analysis is that the percentage of income from this source to the total is almost directly correlated with the amount of land possessed by different castes. The income from the agricultural labour for the village comes to 5.6% only. Evidently, the people do not rely much on this source. It is also important to note that Brahmins and Muslims do not get any income from this source. Roughly speaking, 34.9% of the total income flows from non-agricultural labour. Muslims obtain more than half e.g. 53%while Chamars, Kumhars and Brahmins get, on an average, 47% of their total income from this item revealing the dependence of these castes mainly on business, trade and service. The item 'Occupations other than farming' yields 22.5% of the total income. Malis get 46.7%—the highest income from this source. Income from 'Others' is significant only for Jats, Khatis and Rajputs.

The per capita income per month for the whole village comes to Rs. 18.3. The average per capita per month income for Jats is the maximum e.g. Rs. 29.8 and the minimum is Rs. 11.6 for Chamars. The incomes of other castes fall between these two broad limits.

4. *Expenditure Pattern*:

The data in respect of each sample family for several items of consumption was collected. These items are food, clothing and footwear, fuel and lighting, house rent and repairs, services, ceremonies and functions and miscellaneous items. Miscellaneous items include education, litigation, medicine and travelling, etc. The value of articles obtained as wages in kind

No.	Caste	Av. size of fami-ly.	Land per fam-ily (in big-has)	Annual income per family (in Rs.) Culti-vation of land.	Agricul-tural labour.	Non-agri-cul-tural lab-our.	Occu-pat-ions other than farm-ing.	Others-	Total per fam-ily	Total Per cap-ita.
1.	Chamar	4	8.5	56.6 (9)	145.5 (22.5)	309.2 (48)	122.3 (19)	9.8 (1.5)	643.4	139.8
2.	Kumhar	9.3	13.7	204.0 (11.2)	333.0 (18.6)	837.5 (46.4)	389.2 (21.8)	35.7 (2)	1799.7	192.8
3.	Mali	7.6	13	202 (17)	108.8 (9)	311.3 (25.7)	566.3 (46.7)	20.6 (1.6)	1209.5	161.3
4.	Rajput	8	17	600 (30.3)	166 (8.8)	679 (34.9)	380 (19.8)	116 (6.2)	1942.4	242.9
5.	Khati	8	26.6	816.7 (45.2)	100 (5.8)	440 (24.8)	303.3 (17.7)	113 (6.5)	1773.3	193.2
6.	Jat	7	50.8	683.3 (67)	33.3 (1.3)	86.7 (3.5)	465 (18.6)	241.7 (9.6)	2510	358.5
7.	Brahmin	15	35	1000 (30)	—	1440 (43.1)	750 (22.4)	150 (4.5)	3340	222.6
8.	Muslim	11	13	600 (21.2)	—	1500 (53)	630 (22.2)	100 (3.6)	2830	257.1
	Total			5163.1	881.6	5603.7	3606.1	783.8	16048	1768.2

NOTE:- Figures in brackets indicate percentage to total income from different sources of income of each caste.

was not taken into consideration in recording expenditure since these were almost insignificant. Interest paid on loans was excluded from consumption expenditure.[1]

Statement showing expenditure pattern in Khedla annual expenditure per family (in Rs.)

S. N.	Cast	Food	Clothing & Footwear	Fuel & Rent	Ceremonies & Services.	Misc.	Total
1.	Chamar	535.8	81.0	21.0	117.0	41.0	795.8
		(67.4)	(10.2)	(2.6)	(14.7)	(5.7)	
2.	Kumhar	1414.0	274.0	116.0	362.0	98.0	2664.0
		(62.5)	(12.1)	(5.1)	(16.0)	(4.3)	
3.	Mali	1073.0	138.5	52.0	91.0	52.0	1406.5
		(76.4)	(9.8)	(3.7)	(6.4)	(3.7)	
4.	Rajput	1483.0	285.0	221.0	99.0	81.0	2169.0
		(68.4)	(13.1)	(10.2)	(4.6)	(3.7)	
5.	Khati	1050.7	173.0	43.0	66.0	182.0	1514.7
		(69.3)	(11.4)	(2.9)	(4.4)	(12.0)	
6.	Jat	1349.2	231.0	333.0	392.0	123.0	2428.2
		(55.5)	(9.6)	(13.7)	(16.1)	(5.1)	
7.	Brahmin	2038.0	510.0	520.0	1605.0	180.0	4853.0
		(42.0)	(10.5)	(10.7)	(33.1)	(3.7)	
8.	Muslim	2142.5	440.0	172.0	1175.0	247.0	4176.5
		(51.3)	(10.5)	(4.2)	(28.1)	(5.9)	
	Total	11086.2	2132.5	1478.0	3907.0	1004.0	19607.7

NOTE:—Figures in brackets denote percentages to total expenditure of each caste.

The average annual expenditure for the whole village comes to about Rs. 2451 as against the corresponding figure of Rs. 2,006 for income. There is, thus, on an average, a deficit of Rs. 445.

On an average, 69% of the total expenditure is incurred on food by Chamars, Malis, Rajputs and Khatis. If the expenditure on clothing is added to it, this average percentage works out to 77. As against this, the average expenditure incurred on food and clothing by Jats, Brahmins and Muslims is lower i.e. 63% showing that the expenditure by them on other items like fuel and rent, marriages, education, medicine, etc. is comparatively higher.

Analysis of the pattern of food expenditure reveals that the per capita expenditure by Chamars is the lowest on food whereas Jats incur the highest. Chamars devote 74% of their total food expenditure to cereals as compared to an average of 54% for the whole village. The proportion of food expenditure on pulses does not show wide variations from caste to caste. Muslims spend the least on this item. It is interesting to note that the percentage expenditure on spices is the highest by Chamars

1. This was because 'the debt may relate to items incurred for the maintenance of the level of living in some previous year. They do not, therefore, properly belong to consumption expenditure, which measures the current level of living' (IL.O.—Methods of Family Living Studies, 1949—p. 21).

in the village. Vegetables form an integral part of the consumption expenditure, especially of Jats, Khatis, Kumhars and Brahmins. The highest percentage—8.4% is incurred on meat by Muslims. The expenditure on this item is also significant by Jats, Khatis and Rajputs while Chamars and Malis cook it on several auspicuous occasions. The expenditure on tea is Rs. 13 per annum i.e. 1.2% of total food epxenditure. The expenditure on clothing shows that women incur more expenses than men partly because their clothing needs are more numerous and partly they resort to costlier type of clothes. The expenditure in respect of children is 22% of total expenditure on clothing.

The average per family expenditure on kerosene oil and matchbox is fairly stable i.e. Rs. 12/- and Rs. 3/- per annum respectively. People use cowdung cakes, dry leaves, twigs and straw as fuel which they collect from nearby fields. During the course of the enquiry, only Kumhars and Rajputs gave figures for expenditure on fuel. Broadly speaking, the houses are self-owned and therefore, no rent is paid. A typical house of the village is a small Kacha one with mud walls and thatched roofs. There are, however, a few pucca house owned by Malis, Jats, Brahmins, Rajputs and Muslims who devote on this item 89% of the expenditure on repairing incurred by all the castes. This shows that expenditure on repairing is less significant for Kacha houses as it requires only periodical plastering with cowdung. The average per family expenditure on education and medicine is Rs. 21/- which accounts for 0.85% of total expenditure. People spend lavishly on marriages and nuktas. The expenditure on this item works out at 17.5% of total expenditure. Tobacco is used in general and it forms 1% of total expenditure by all the castes.

Analysis of expenditure pattern indicates the working of well-known Eugle's Law of Consumption. The proportion of expenditure devoted to food varies from 50% to 76% except that of Brahmins. This leaves a smaller percentage of expenditure to be spent on housing, education, medicine, clothing and footwear, etc. Even the expenditure on food is not well-balanced from the nutrition point of view. The proportion of protective and supplementary food such as fruits, vegetables, eggs and meet etc. is extremely small and falls short of the optimum standard to maintain vigorous health and efficiency.

5. *Predominantly a Consumption Village*

The income and expenditure analysis conclusively shows that Khedla is essentially a consumption village. The volume of saving is nil. The per capita income for the entire population in Khedla works out at Rs. 18|3|- per month whereas the per capita expenditure comes to Rs. 23|- showing considerable dissaving. Analysing the income and expenditure of different castes, it is found that all the castes obtaining in Khedla except Khatis and Jats incur an excess of expenditure over income. Only the two castes Khatis and Jats afford to save. The following table is a better index of the living standards of the people:—

Total number of families in each Income-group

Income Group in Rs.	Under 50	50-100	100-150	150-200	200-250	250-300	300 Over
Number of families in each income group	6	15	7	6	2	3	2

Though the total number of houses in the village is 102, actually income returns were recorded for 41 houses for intensive study. From the above table, nearly 50% of the families lie in the first two income-groups while roughly 68.7% in the first three below Rs. 150. There are only 7 families above Rs. 200 showing that there are few richer families in the higher income-groups and the vast majority of them are poor.

Further, a family budget consumption schedule provides a clear picture of the average standard of living of a family in each income-group. The average income and expenditure are obtained by dividing the totals of these income-groups by the number of families in each income-group. The following table shows the income-group, average income and expenditure as well as saving and dissaving for each income-group per month:—

Family budget consumption schedule

Income-Group in Rs.	Average income for Groups in Rs.	Average consumption for Group in Rs.	Savings or dis-savings.
0-50	36.2	36.0	+ .2
50-100	77.2	77.0	+ .2
100-150	131.2	124.0	+ 7.2
150-200	165.5	183.0	—17.5
200-250	231.0	224.0	+ 7.0
250-300	274.3	277.6	— 3.3
Over 300	317.0	372.3	—55.3

6. *Some General Observations*

It may be appropriate here to briefly examine the influence of changes over the past several years on the living standards of the people in Khedla. Khedla has been a self-sufficient village. A decade ago, most of the transactions carried on in the village were in terms of goods and services. But the huge network of construction started in Pilani by the Birla Education Trust and the migration of some of the villagers to work at Bhakra Nangal Project (because the wages offered there are higher and attractive) provided ample employment opportunities to them, especially to the poorer sections of the village. Due to this development, the economy of the village has been brought within the framework of our developmental plans which influence the consumption and income patterns of the villagers through the instrument of price changes. Any change in prices, especially in the prices of Bajra, Gram, Moth, Jowar and other crops sold by the people of this village and the commodities like tea, gur, rice and coarse cloth etc. which they buy correspondingly change their income and expenditure patterns, thus affecting their living standards. Further, the outlook of the villagers has widened due to their grrowing contact with the educated classes in Pilani. A Primary School was established in the village in 1955. The Birla Sarvajanik Hospital established in 1952 provides free medical aid to the people although the majority of the villagers still purchase deshi stuff from the Vaids who exploit them unduly.

7. *Suggestions*

As the facts stand, the dominant conclusion of this survey is that the living standards of the people are distinctly low and the volume of savings is almost nil. For raising the economic conditions of the villagers, the following suggestions may be outlined:—

(a) *Economic Needs*: The village consists mainly of agriculturists where the importance of water needs hardly be stressed. The rainfall is not only low but it is also not well-timed and certain. There are only three wells in

this village which are hardly sufficient for drinking and bathing purposes. There is no canal or other means of irrigation in the whole district nor is there any plan for building one. The attention of those in authority is pointedly drawn to this basic need of the people of this area. Since it is said that the sub-soil water here reveals ample supply of underground water, this should be tapped by all possible means. Further, the introduction of poultry-keeping, carpentry, pottery, hand-weaving and other cottage industries has a bright future. For example the people in Pilani depend mainly on the Delhi or Jaipur market for the supply of eggs. Thus, evidently, the poultry-keeping can be profitably started by the villagers. However, the provision of adequate credit and marketing facilities could only provide a positive encouragement to the villagers for setting up such industries. A well-organised multi-purpose society, if started, would obviate this difficulty to a great extent.

(b) *Social Needs*: Since education in the village is imparted upto the primary stage, the provision upto high or middle school stage should be made. This is because the villagers cannot afford to send their children outside for education beyond the primary stage due to extreme poverty. Furthermore despite the provision of free medical aid by the Sarvajanik Hispital at Pilani, these facilites are provided with high cost in many cases. It is important to make these services both efficient and economic to them. The occasional trips arranged by the students of various colleges for providing free medical aid would prove beneficial. Besides, this village is a melting pot of different castes and religions which suffer from inelasticity of dietaries due to caste prejudices, social customs and inertia. The average diet of the villager is unbalanced and faulty for the religious and economic considerations largely determine whether fish, flesh, milk, ghee and eggs etc. will enter into the dietary or not. This, coupled with the inappropriate preparation of food make people susceptible to various diseases. As it is not possible to provide nutrition at optimum level for every village due to limited income and religious sanctions, the nutrition should at least be given to vulnerable groups, namely, expectant and nursing mothers, infants, toddlers and school-going children.

The lines of reform as indicated above can only be feasible if a healthy atmosphere is created among the villagers, Khedla inhabited by many castes is divided into two groups, namely, Jats, Khatis on the one hand and Raputs, Malis and Chamars etc. on the other hand. Whenever an occasion arises for taking some important decision for the village as a whole, co-operation is not extended by all with the result that much energy is frittered away by both the groups in winning their own respective cases. A fair election of the village panchayat and spread of education could only help dispel caste prejudices and develop co-operative spirit among the people.

(c) *Role of Government*: The National Extension Block was established at Chirawa on October 1955. The village under survey comes under the operation of this block. The progress report obtained from the office of the block reveals that the extension activity in Khedla has so far been confined to the distribution of fertilisers, seeds of bajra and vegetables, digging of compost pits, organising community meetings, repairing of a well and its disinfection, provision of medical aid and the construction of a Kucha road by securing voluntary labour. The response of the villagers, on the whole, has not been favourable. During the course of the enquiry, the author collected the information that this is partly due to the caste-prejudiced nature of the village level worker. In the ultimate analysis, however, the scccessful prosecution of the activities undertaken by the extension block would depend, in a large measure, on the introduction of the lines of reform as outlined above.

Chinese Method Of Paddy Cultivation

By: M. M. P. Shrivastva

Rice is one of the most important crops of the world and is the staple food of the teaming millions of the South East Asia. India is the largest rice growing country in the world, cultivating about 75 million tons of clean rice. However, in spite of its wide cultivation, the the average yield in India is one of the lowest in the world. The production of clean rice is only 746 lb., compared to 3234 lb. in Spain, 3105 lb. in Italy, 2251 lb. in Japan, 1549 lb. in China and 2062 lb. in Egypt.

The crying need of the day is to step up food production as far as practicable and as soon as possible. Taking into consideration the total cropped area of the country estimated at 326 million acres, we find that our average crop yields are not satisfactory. Though in the unrelenting war on hunger and poverty, some crucial battles have already been won, as evidenced from the report that in 1958 the per acre average yields of the two major food crops of the country paddy and wheat were 3960 and 1320 pounds respectively but still our crop yields compare infavourably with those of our two important neighbours—*Japan and China*. Japan gets three times as much rice or wheat per acre as does India. Compared with India, China gets thrice as much rice and four times as much cotton per acre.

To bridge the gap in crop yields and to step up food production, more and more land is being continually brought under the plough and simultaneously a planned drive is on the whole country for higher crop yields by adopting scientific farming techniques. Till very recently, the Japanese method of paddy cultivation had the place of pride among the recommendations made for increasing rice yields in India but now it is reported that Chinese method of paddy cultivation is equally effective and worthy of imitation.

Dr. Punjab Rao Deshmukh, Union Minister for Agriculture, who pioneered Japanese method of paddy cultivation in India, has recently made full scale study of the newly introduced Chinese methods of paddy cultivation. Intensive experiments on Chinese Method are in progress in selected Government farms all over India.

The highest "average yield" of rice in China mentioned is only 6800 lbs. per acre. Deep ploughing, dense planting, irrigation and drainage and an unbelievably high dosage of plant food are the factors listed as responsible for the high yields. The main features of the Chinese method of paddy cultivation may be summed up as follows:—

1. *Deep ploughing*: Deep ploughing has been claimed, when carried out in conjunction with a heavy dressing of manure mixing it with the ploughed loose sand and spreading it layer after layer and putting in hollow bamboos at various places and at fairly long distance, so as to permit the fresh air, adds to the fertility of the soil and helps to retain in it the moisture and air needed for plant growth.

2. *Heavy seed rate*: This is entirely new and novel feature of the Chinese Agriculture. The Chinese claim extraordinarily high yields due to heavy seed rate in deep ploughed lands, the like of which has never been heard of in the world before. The density of planting was from 180,000 to 300,000 clusters of rice per acre. i.e. 1800,000 to 3000,000 rice plants. In same deeply ploughed and heavily manured areas, the density was as high as 300,000 to 480,000 clusters of rice per acre.

The yields as claimed by Chinese is so abnormally high that some Japanese experts considered them improbable and unbelievable.

3. *Regular spraying*: The Chinese farmers do not wait for pests to break out. They employ effective methods of controlling diseases and pests in advance. They spray and dust their crops regularly and freqcently.

4. *Higher dose of fertilizer applications*: Survey made in different parts of the country showed that in order to obtain a yield of 6800 lbs. per acre, 300 tons of fertile silt or upto 30 tons of compost per acre were required. Roughly assuming that the compost contains 1 percent N, 1 percent P_2O_5 and 1.5 percent K_2O, 30 tons compost per acre is equivalent to 680 lbs. of N (or 3400 lbs. of ammonium sulphate), 680 lbs. of P_2O_5 (or 4250 lbs. of 16% super phosphate) and 1020 lbs. of K_2O (or 2040 lbs. of 50 percent muriate of potash) Thus an equivalent of more than 4 tons of chemical fertilizers per acre has been used by the Chinese to obtain a yield of 6800 lbs. of rice.

5. *Daily change of water*: The water from the field should be changed daily and again new water poured in.

6. *Provision of artificial respiration through electric lights*: Artificial respiration through electric lights are provided to the growing plants.

These are some of the most important features of the Chinese Method of paddy cultivation. Experiments with different permutations and combinations of the Chinese Method are in progress and we have still to see whether this method is suitable and profitable for the different soils and conditions obtaining in different regions of our country.

Although we are still to see the results of its experimentation, it seems that such prodigious application of manures, as the equivalent of 4 tons of chemical fertilizers per acre of rice can be of little more than academic interest to the Indian Farmer. India certainly cannot afford the equivalent of 4 tons of chemical fertilizers to an acre. Our soils, except perhaps the Gangetic or Deltaic alluvium are not amenable to deep ploughing. We have no seeds to spare for planting at such a higher rates.

Butter Milk - The Life Increasing Product Of Human Beings

By: B. G. Nikam

IN Ayurveda there is a shloka

न तक्रसेवी व्यथते कदाचित न तक्र दग्धाः प्रभवन्ति रोगाः॥

यथा सुराणाममृतं सुखाय तथा नराणां भुवि तक्रमाहुः॥

'meaning one who takes butter milk is neither found diseased nor diseases appear in him. Butter milk gives happiness to the man as the nector gives happiness to the God's. Again there is a line in another Sanskrit shloka "तक्र शक्रादिप दुर्लभः॥ 'meaning butter milk is difficult even to God Indra,' In Sanskrit literature the importance of the use of the butter milk is described in various places. The use of the butter milk in daily diet not only keeps the human being healthy and strong, but it lengthens the life of a man. It is a life increasing product of the human society.

Butter milk prepared by souring sweet milk is well known to all Indian people. It is used with bread and rice by the poor villagers. Kari (करी) prepared from it is used in all Indian homes. In the south it is a favourit part of the diet taken with rice and in the north it is taken as 'Lassi' in summer season as a cooling agent. Doctor also prescribe fresh butter milk to a sick person, as it is easily digested and energetic. Such a valuable food product is either thrown away or fed to the cattle in the Indian villages.

The leaving organism *Lactobasillus bulgaricus* (belonging to Bacterial group primarily producing lectic acid) found present in the butter milk gives longevity to the man.

By whom it was discovered itself is an interesting story, and it runs as under.

Metchnikoff, a Bulgarian scientist, when once travelling through southern Russia and Balkan countries to his surprise found that majority of peasant classes of that part were of eighty years and more with sound and strong health. Curiously he enquired about the diet that they took and he was much impressed to see that large quantity of fermented milk and saur milk beverage was used by those poor villagers as food. By his enquiry and survey he reached the conclusion that the peasants of that region were particularly long lived. He attributed the longevity to the large use of the soured milk in diet.

After return to his country (Belgaria) he made a research of the favourite milk beverages and isolated the organism *Lactobacillus* chiefly responsible for the lactic acid fermentation. He got the same organism from the Bulgarian soured milk and he named this organism as *Lactobacillus bulgaricus* after the name of his country Bulgaria. Metchnikoff, is the first scientist, to show to the world that human life can be lengthened by the large use of the butter milk containing the organism *Lactobacillus bulgaricus.*

In India, we see examples of having long life among shepherd class who take a large quantity of butter milk in their daily diet. Majority of them possess a long life of seventy-five years and more without knowing sickness in their life. They also maintain watch dogs to look after their herds to whom they feed on butter milk. These dogs remain healthy, strong and two such dogs can kill a tiger.

These organisms belong to the genera *Streptococcus* and *Lactobacillus* group. *Streptococcus lactis* types are responsible for the development of ripeness in the milk and for the sliminess in certain cultures or starters. Butter milk possesses its flavour and acidity due to bacteria of this group Artificial butter milk is prepared by inoculating sweet milk with a considerable portion of pure culture of lactic acid bacteria, when the milk has curdled it is beaten or churned so that the casein is divided into fine particles. This is to be prepared to true butter milk as a beverage because of the greater uniformity in flavour and texture. Milk soured in this manner may also be flavoured with fruit juices and frozen into a kind of milk 'Sherbet.'

Lactobacillus bacteria are found developing in milk and various fermented food stuff. A few species have been reported from the elementary tract of man and animals. One of the best known species is *Lactobacillus bulgaricus* described by, the Bulgarian scientist, (Metchnikoff) found in sour milk. The total amount of acid produced is usually greater than that produced by *Streptococcus lactis.* Growth of the organism *Lactobacillus bulgaricus* continues in strong solution of acid and it is termed *acid tolerants.* This organism grows best under anaerobic condition and better below the surface of the medium than at the top.

Such god given product found in sour milk, which gives a long, sound and healthy life is a boon to the human society.

The name of Metchnikoff, the Bulgarian Scientist, who has discovered this organism, and showed to the world its importance. will be remembered and spoken of as long as the science is studied.

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